CHASHKIN, M.M., inzh.

For small towns and settlements. Biul.tekh.inform. 4 no.11:30 N '58.
(MIRA 11:12)
(Walls)

CHASHKIN, M.M., inzh.

Making partitions in construction yards under winter conditions.
Transp.stroi. 9 no.12:33-35 D '59. (MIRA 13:5)
(Leningrad--Walls) (Concrete slabs)

SHISHKIN, Nikolay Fedorovich, kand.tekhn.nauk; OLEKSEVICH, Valeriy Pavlovich; DANILIN, Petr Yakovlevich; MIKHEYEV, Yuriy Aleksandrovich; SYCHEV, Leonid Ivanovich. Prinimali uchastiye: SHALAGINOVA, T.S., inzh.; SMORODINSKIY, Ya.M., kand.tekhn.nauk; KALINICHENKO, M.F., inzh.; CHASHKIN, Ye.V., inzh.; ASTAF'YEV, V.D., inzh.; PROKOP'YEV, V.I., vedushchiy konstruktor; ROGOV, V.A., starshiy master; MOSKALENKO, V.M., laborant; GERASIMOV, N.P., laborant; POPOV, N.A., kand.fiziko-matem. nauk; KALINICHENKO, M.F., inzh.; LYUBIMOV, N.G., otv.red.; ALADOVA, Ye.I., tekhn.red.; PROZOROVSKAYA, V.L., tekhn.red.

[Protection of the electric equipment and cable networks in mines] Zashchita shakhtnykh elektroustanovok i kabel'nykh setei. Pod red. N.P.Shishkina. Moskva, Ugletekhizdat, 1959. 242 p. (MIRA 12:3)
(Electricity in mining) (Electric cables)

VORONEL', A.V.; CHASHKIN, Yu.R.; POPOV, V.A.; SIMKIN, V.G.

Measurement of the heat capacity C_v of oxygen near the critical point. Zhur. eksp. i teor. fiz. 45 no.3:828-830 S '63. (MIRA 16:10)

1. Institut fiziko-tekhnicheskikh i radiotekhnicheskikh izmereniy.

(Oxygen--Thermal properties)

L 28074-66 EWT(m)/ETC(m)-6 RM/WW/JW

ACC NR: AP6014028 SOURCE CODE: UR/0056/66/050/004/0897/0904

AUTHOR: Voronel', A. V.; Gorbunova, V. G.; Chashkin, Yu. R.; Shchekochikhina, V. V. 58 56 B

ORG: All-Union Institute of Physicotechnical and Radiotechnical Measurements (Vsesoyuznyy institut fiziko-tekhnicheskikh i radiotekhnicheskikh izmereniy)

TITLE: Specific heat of nitrogen near the critical point

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 50, no. 4, 1966, 897-904

TOPIC TAGS: nitrogen, specific heat, critical point, temperature dependence, thermogram

ABSTRACT: In connection with the discussion concerning the analytic form of the specific heat singularity near the critical point (M. E. Fisher, Phys. Rev., 136, A1599, 1964; M. E. Fisher, J. of Mathem. Phys., 5, 944, 1964), certain measurement results of the specific heat of nitrogen near the critical point are presented for an extended temperature range within 0.01C of T_c. The experimental errors are less than 5%. The data obtained indicate a logarithmic

Card 1/2

dependence of the specific heat on temperature for $T \rightarrow T_c$ and $T < T_c$; the slopes of curves are the same from the left and right, that is, for $T > T_c$ and $T < T_c$, and the finite change $\Delta C_v = \lim (C_v^+ - C_v^-)$ for $|T \rightarrow T_c| \rightarrow 0$ remains the same, in agreement with an earlier work M. Ya. Azbel, A. V. Voronel', M. Sh. Giterman, ZhETF, 46, 673, 1963). Since the value of the T_c is important for interpreting the results, its value has been determined with an accuracy of 0.001C by a method similar to the thermographic one. In this connection it has been found that by using the results of a previous paper (Yu. R. Chashkin, V. G. Gorbunova, A. V. Voronel', ZhETF, 49, 433, 1965), the total amount of impurities in the gas can be determined with greater reliability accurate to 0.02%. The authors thank V. Vaks and A. Larkin for discussing certain problems. Orig. art. has: 6 figures, 2 formulas, and 1 table. [Based on authors' abstract]

[NT]

SUB CODE: 20 / SUBM DATE: 03Nov65/ ORIG REF: 009/ OTH REF: 010

Card 2/2 CC

L 63961-65 EWT(m)/EPF(c)/EPF(n)-2/EWP(t)/EWP(b) IJP(c) JD

ACCESSION NR: AP5006762 S/0056/65/048/003/0981/0984

AUTHOR: Voronel', A. V.; Snigirev, V. G.; Chashkin, Yu. R.

TITLE: The specific heat of pure substances close to the critical point

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 48, no. 3, 1965, 981-984

TOPIC TAGS: argon, nitrogen, oxygen, specific heat measurement

ABSTRACT: The specific heat of argon of critical density was measured very carefully in temperature intervals down to approximately 0.02K. Since there are considerable discrepancies in the literature on the critical density of argon, the measurements were made at several densities close to critical. The quantity of gas in the calorimeter was determined by weighing, and the measurement error did not exceed 0.1%. Tables are given for densities of 0.533, 0.530 and 0.538 g/cm^3. It was found that 0.533 g/cm^3 is closest to the critical density. Curves are given for specific heat as a function of temperature for argon, nitrogen, and oxygen. The curves for argon show a sharp reduction in slope with deviations from the critical density. "The authors thank A. P. Golub', V. A. Popov, V. V. Shchekochikhina, and

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L 63961-65

ACCESSION NR: AP5008762

2

V. G. Borbunova for help with the measurements." Orig. art. has: 2 figures and 3 tables. [14]

ASSOCIATION: Institut fiziko-tekhnicheskikh i radiotekhnicheskikh izmereniy (Institute of Physicotechnical and Radiotechnical Measurements)

SUBMITTED: 28Dec64 ENCL: 00 SUB CODE: TD, IC

NO REF SOV: 003 OTHER: 002 ATD PRESS: 4071

Card 2/2

L 5146-66 EWT(l)/EWT(m)/EPF(c)/EWP(j)/ETC(m) RPL WW/JW/RM

ACCESSION NR: AP5021104 UR/0056/65/049/002/0433/0437

AUTHORS: Chashkin, Yu. R.; Gorbunova, V. G.; Voronel', A. V.

TITLE: Influence of impurities on the singularity of the thermodynamic potential at the liquid-vapor critical point

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 49, no. 2, 1965, 433-437

TOPIC TAGS: air, nitrogen, specific heat, Curie point, critical point, thermodynamic characteristic, vaporization

ABSTRACT: The specific heat of air and nitrogen containing 1.2 per cent impuirities were measured near the critical point and the results compared with those obtained earlier for pure substances (ZhETF v. 43, 728, 1962 and v. 45, 828, 1963). The measurement method was described elsewhere (PTE no. 6, 111, 1960). Plots of the specific heat against the temperature and against the relative temperature difference are presented and a table of the specific heat of air for different temperatures is given. The results show that the lower the

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0901 1091

L 5146-66

ACCESSION NR: AP5021104

impurity content in a substance, the closer the rise of the specific heat is to the logarithmic rise observed in a pure substance. The impurities cause the logarithmic singularity of the specific heat C_v near the critical point to become deformed, with the deformed $C_v(T)$ curve resembling the $C_p(T)$ for solids near the Curie point. It is suggested that the formula obtained earlier for C_v (ZhETF v. 46, 673, 1964) be modified to include a term proportional to the total number of the impurities. Orig. art. has: 2 figures and 2 tables.

ASSOCIATION: Institut fiziko-tekhnicheskikh i radiotekhnicheskikh izmereniy (Institute of Physicotechnical and Radiotechnical Measurements) 44,55

SUBMITTED: 10Mar65 ENCL: 00 SUB CODE: TD

NR REF SOV: 009 OTHER: 002

Card 2/2

L 05773-67 EWT(m)/EWP(j)/EWP(t)/ETI IJP(c) JD/WW/JW/RM

ACC NR: AP6031431 SOURCE CODE: UR/0056/66/051/002/0394/0400

AUTHOR: Voronel', A. V.; Chashkin, Yu. R.

ORG: Institute of Physicotechnical and Radio Engineering Measurements (Institut fiziko-tekhnicheskikh and radiotekhnicheskikh izmereniy)

TITLE: Specific heat of C_v of argon as a function of density near the critical point

SOURCE: Zh eksper i teor fiz, v. 51, no. 2, 1966, 394-400

TOPIC TAGS: argon, critical point, specific density, specific heat

ABSTRACT: The singularity of C_v near the critical point was investigated by measuring the specific heat at twelve densities above and below the critical point. The singularity of C_v is approximately symmetrical with respect to density. The change in the specific heat ΔC_v as a function of density is slightly anomalous near the critical point. The authors thank V. G. Snigireva, L. A. Snigerev, and G. N. Chernov for their help in the laborious measurement and processing the results, and M. Sh. Giterman for repeated discussions. Orig. art. has: 1 figure, 4 formulas, and 5 tables. [Based on authors' abstract]

SUB CODE: 20/ SUBM DATE: 26Feb66/ ORIG REF: 010/ OTH REF: 006/

Card 1/1 egb

CHASHKOV, M.T., inzh.; KREYNER, I.D., inzh.

Mechanization of engineering calculations with use of industrial computing machine stations. Sudostroenie 26 no.8:58-59 Ag '60. (MIRA 13:10)

(Naval architecture--Tables, calculations, etc.)
(Calculating machines)

KREYMER, I.D., insh.; CHASHKOV, M.T., inzh.

Mechanizing the calculation of statical stability on rough sea.
Sudostroenie 28 no.8:48-50 Ag '62. (MIRA 15:8)
(Stability of ships) (Punched card systems--Shipbuilding)

CHASHKOVA, V , red.

[Protect our wealth] Beregite nashe bogatstvo. Vladivostok, Dal'nevostochnoe knizhnoe izd-vo, 1965. 46 p.
(MIRA 19:1)

SMIRNITSKIY, M.A., insh.; CHASHNIK, A.I., insh.

Adjusting the electromagnetic voltage corrector of a generator equipped with electronic excitation. Elek sta. 30 no.2:52-55 F '59. (MIRA 12:3)
(Electric generators) (Electric controllers)

CHASHNIK, A.I., inzh.

Choice of the principal parameters of forced excitation of synchronous generators. Elektrotekhnika 36 no.8:32-34 Ag '64. (MIRA 17:9)

CHASHNIK, M.Z.; FINKEL'SHTEYN, S.M.

Problem concerning the transmission factor of a stage of directional couplers. Izv. vys. ucheb. zav.; radiotekh. 6 no.2:166-172 Mr-Ap '63. (MIRA 16:6)

1. Rekomendovana kafedroy teoreticheskikh osnov radiotekhniki Kiyevskogo ordena Lenina politekhnicheskogo instituta.
(Wave guides) (Microwaves) (Radio lines)

CHAZHKIK, M.B., kand. tekhn. nauk (Kiyev); [illegible], S.M., kand. tekhn. nauk (Kiyev)

Reply to comrade Sahlin. Izv. vys. ucheb. zav.: radiotekhn. 7 no.4: 540 Jl-Ag '64. (MIRA 17:11)

L 31903-66 EWT(d)/FSS-2

ACC NR: AP6010723 SOURCE CODE: UR/0142/66/009/001/0059/0062

AUTHOR: Finkel'shteyn, S. M.; Chashnik, M. Z.

ORG: none

TITLE: Use of directional couplers in some SHF systems

SOURCE: IVUZ. Radiotekhnika, v. 9, no. 1, 1966, 59-62

TOPIC TAGS: directional coupler, SHF communication, OSCILLATION, COHERENT SIGNAL, PHASE SHIFT

ABSTRACT: The possibility is substantiated of using directional couplers as devices that combine powers of coherent SHF oscillations and as nonabsorbing adjustable attenuators. To combine the powers of coherent oscillations (having equal or different amplitudes), a 90° phase shift between the oscillations at inputs I and III (see Figure 1) of the directional couple. must be achieved. This method is applicable for combining any number of coherent oscillations; a sketch for five-

Card 1/2

UDC: 621.372.832

ACC NR: AP7002627 (A,N) SOURCE CODE: UR/0413/66/000/023/0166/0166

INVENTOR: Chashnik, M. Z.; Ivanov, V. A.

ORG: None

TITLE: Exciter for a metal-dielectric antenna with axial radiation. Class 21, No. 123580

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 23, 1966, 166

TOPIC TAGS: waveguide antenna, microwave technology, ANTENNA RADIATION PATTERN

ABSTRACT: This Author's Certificate introduces an exciter for a metal-dielectric antenna with axial radiation of a fundamental asymmetric EH_{10} wave. Design of the unit is simplified by making it in the form of two diametrically opposite rows of coupling loops turned toward opposite sides and spaced at distances considerably less than λ inside the dielectric layer of the antenna. These coupling loops are fed by auxiliary loops or by stubs located inside the coaxial cable.

SUB CODE: 09/ SUBM DATE: 05Sep58

Card 1/1

CHASHNIK, S.D.; SHUSTER, V.G.; MUL'TANOVSKIY, M.P. [redaktor].

[German-Russian medical dictionary] Nemetsko-russkii meditsinskii slovar'. Sostavili S.D.Chashnik i V.G.Shuster, pod red. M.P.Mul'tanovskogo. Moskva, Medgiz, 1953. 536 p. (MLRA 6:8)
(German language--Dictionaries--Russian) (Medicine--Dictionaries)

CHASHNIK, V.M.

New geophysical instruments designed by the Special Design Bureau of the Ministry of the Geology and Conservation of Mineral Resources. Geofiz.prib. no.8:3-7 '61. (MIRA 15:7)
(Prospecting—Geophysical methods)

CHASHNIK, V.M.

New geophysical instruments developed by the Special Design Bureau of the Ministry of the Geology and Conservation of Mineral Resources. Geofiz. prib. no.10:5-12 '61. (MIRA 15:8)
(Geophysical instruments)

VESHEV, A.V.; YARYSHEV, B.P., nauchnyy red.; CHASHNIK, V.M., otv. red.; REYKHERT, L.A., ved. red.; FEDOROV, S.S., tekhn. red.

[Low-frequency electric prospecting apparatus] Elektrorazvedochnaia apparatura nizkoi chastoty. Leningrad, Gostoptekhizdat, 1962. 49 p. (MIRA 15:8)
(Electric prospecting—Equipment and supplies)

VOLKOVA, Ye.A.; DUBROV, Ye.F.; SOKOLOV, O.N.; Prinimali uchastiye: PEYBO, I.V.; BULATOVA, Zh.M.; VIALIN, B.K., glavnyy red.; CHASHNIK, V.M., otv.red.; REYKHERT, L.A., vedushchiy red.; DODONOVA, L.P., red.; KONDYURINA, Ye.N., red.; FEDOROV, S.S., tekhn.red.

[Problems in acoustical logging] Voprosy akusticheskogo karotazha. Leningrad, Gostoptekhizdat, 1962. 151 p. (Geofizicheskoe priborostroenie, no. 13). (MIRA 16:8)
(Prospecting--Geophysical methods)

(N) L 12039-66 EWT(1)/FCC GW

ACC NR: AT5028737 SOURCE CODE: UR/3175/65/000/023/0003/0008

44 55

AUTHOR: Chashnik, V. M.

ORG: none

TITLE: New geophysical instruments developed by OKB GGK SSSR

SOURCE: USSR. Gosudarstvennyy geologicheskiy komitet. Osoboye konstruktorskoye byuro. Geofizicheskaya apparatura, no. 23, 1965, 3-8

TOPIC TAGS: magnetometer, magnetic induction

ABSTRACT: The MA-21 astatic magnetometer is designed for field and stationary laboratory measurements of magnetic susceptibility (χ) and of the magnitude and direction of the remanence (I_n) of rock samples with remanences of $1 \cdot 10^{-8}$ CGS units or greater. The sensitive element of the magnetometer is a two magnet astatic system suspended on a metal filament inside a tube. The maximum sensitivity of the astatic system is (5-7) 10^{-7} Oe/div. The ION-1 remanence meter is designed for relative measurements of the magnitude and direction of the remanence vector of samples of weakly magnetic rocks. Measurements performed with this instrument, carried out under laboratory conditions, can be used for the geological interpretation of magnetic anomalies, correlation

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L 12039-66

ACC NR: AT5028737

and differentiation of sedimentary strata by the paleomagnetic method, determination of the relative age of rocks in mineralogical analysis, etc. The measurement range is 10^{-7} to $2 \cdot 10^{-4}$ Gauss. The sensitivity threshold does not exceed $5 \cdot 10^{-8}$ Gauss. Orig. art. has: 2 figures.

SUB CODE: 08,14/ SUBM DATE: 00/ ORIG REF: 000/ OTH REF: 000

Card 2/2

L 13133-66 EWT(1)/FCC GW

ACC NR: AT6000822 SOURCE CODE: UR/3175/65/000/024/0026/0030

AUTHOR: Chashnik, V. M.

ORG: none

26
B+1

TITLE: SMV-2m variational magnetic station

SOURCE: USSR. Gosudarstvennyy geologicheskiy komitet. Osoboye konstruktorskoye byuro. Geofizicheskaya apparatura, no. 24, 1965, 26-30 (28-29 pages only)

TOPIC TAGS: geophysic instrument, magnetometer

ABSTRACT: The station is designed to record variations in the modulus of the total vector of the earth's magnetic field strength δT and variations of its vertical δZ and horizontal δH components at any point of the globe. It may be used for recording variations at geomagnetic observation points. The SMV-2m station is a further improvement on the SMV-2 station, in that the SMV-2 can operate in fields with strengths of ±7000 γ, at +35°C and at relative humidity up to 95%. Its principle of operation is based on the interaction of a permanent magnetic with the

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L 13133-66

ACC NR: AT6000822

earth's magnetic field. The sensitive element (all quartz frame with a moving magnet) is adjusted in zero field; compensation of the earth's normal field is achieved by means of compensating magnets. Orig. art. has: 1 figure.

SUB CODE: 08/ SUBM DATE: 00/ ORIG REF: 000/ OTH REF: 000

Card 2/2 HW

CHASHNIKOV, A.A.; MELESHCHENKO, D.P.

Unusual case of fracture of the humerus with injury of the radial nerve. Khirurgiia no.4:81 Ap '54. (MLRA 7:6)
(SHOULDER, fractures,
*compl., radial nerve inj.)
(FRACTURES,
*shoulder, with radial nerve inj.)
(NERVES, RADIAL, wounds and injuries,
*in shoulder fract.)

CHASNIKOV, A.A., Kuybyshev, Penzenskaia ul.,d.200, kv. 60

Parin's method of skin graftingin ingrown nail. Vest.khir. 75 no.5:91-94 Je '55. (MLRA 8:10)

1. Iz kafedry voyenno-polevoy khirurgii (nach.dots.I.M. Udovin) voyenno-meditsinskogo fakul'teta pri Kuybyshevskom meditsinskom institute.

(NAILS, diseases,
ingrown, nails, surg.,skin transpl.)
(SKIN TRANSPLANTATION, in various diseases,
ingrown nails)

CHASHNIKOV, A. A.

CHASHNIKOV, A. A. -- "Surgical Treatment of Ingrown Nails." Kuybyshev State Medical Inst. Kybyshev, 1956.
(Dissertations for the Degree of Candidate in Medical Sciences).

SO: Knizhnaya Letopis', No 9, 1956

CHASHNIKOV, A.A.

Cancer of the Penis. Khirurgiia Supplement:24-25 '57. (MIRA 11:4)

1. Kuybyshevskiy meditsinskiy institut.
(PENIS--CANCER)

SOLOKHA, A.P., inzh.; CHASHCHINOV, A.V. inzh.; TARASEVICH, L.I., inzh.

Apparatus for automatically controlling pumps. Gor. zhur no.4:52-53 Ap '63. (MIRA 16:4)

(Mine pumps) (Automatic control)

L 10376-63
ACCESSION NR: AP3000332 S/0142/63/006/002/0166/0172

AUTHOR: Chashnik, M. Z.; Finkel'shteyn, S. M. 44

TITLE: Calculating the transmission coefficient of a cascade of directional-couplers

SOURCE: Izv. VUZ: Radiotekhnika, v. 6, no. 2, 1963, 166-172

TOPIC TAGS: directional couplers (waveguides)

ABSTRACT: Although the matrix method of calculating the cascade of directional couplers is rigorous and yields reliable results, it is extremely cumbersome. By using the method of cophasal-and-counterphasal generators, simple formulae are developed for calculating the overall transmission coefficient of the cascade; the formulae hold true with any value of the transmission coefficients of component couplers. The overall coefficient is independent of the sequence of components or of the distance between them. No experimental data reported, but it is claimed that the formulae have been verified experimentally. Orig. art. has: 12 equations and 5 figures.

Kiev Polytechnic Inst.

~~Card 1/2~~

NEVIZHIN, M.F.; CHASHNIKOV, D.I.

Dependence of critical reduction on temperature during the reeling of iron-base alloys. Trudy LPI no.222:162-164 '63. (MIRA 16:7)
(Rolling (Metalwork)) (Iron alloys)

TAKIBAYEV, Zh.S.; CHASNIKOV, I.Ya.; SHAKHOVA, TS.I.; ANZON, Z.V.

Two-prong stars formed in inelastic pp-interactions at 9 Bev.
Trudy Inst. iad. fiz. AN Kazakh. SSR 6:94-100 '63.
(MIRA 16:10)

CHASNIKOV, I.Ya.; ANZON, Z.V.; TAKIBAYEV, Zh.S.; STREL'TSOV, I.S.

Identification of particles by the photographic emulsion technique. Zhur. eksp. i teor. fiz. 45 no.2:29-37 Ag '63. (MIRA 16:9)

1. Institut yadernoy fiziki AN Kazakhskoy SSR.
(Photography, Particle track)

CHASHNIKOV, O.N.

Some remarks on brake adjustment. Zap. Len. gor. inst. 34 no.1:157-160 '57. (MLRA 10:9)

(Brakes) (Mine hoisting--Safety appliances)

25391
S/080/61/034/002/011/025
A057/A129

15.8170

AUTHORS: Motsarev, G.V., Rozenberg, V.R., Chashnikova, T.Ya.

TITLE: Preparation of monochloromethyl-methyldichlorosilane

PERIODICAL: Zhurnal Prikladnoy Khimii, v 34, no 2, 1961, 356-362

TEXT: This is the first paper in a series concerning halogenation of aliphatic silanes and siloxanes. Preparation of chloro-substituted methylchlorosilanes by initiated chlorination of the latter in the presence of azo-bis-isobutyronitril (investigated already in previous works) was studied in details. Particularly reactions to obtain monochloro-substituted dimethylchlorosilane were investigated. Chlorination experiments were carried out in the liquid phase without solvent and light and initial contents of initiator not exceeding 0.05%, while the total maximum consumption was 0.2%. The initiator was added by batches corresponding to the decrease of HCl liberation or in the continuous process together with

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the initial silane. Two series of experiments were carried out, i.e., periodical (reaction products were separated from the reaction zone) and continuous chlorination (no separation of reaction products). It was observed that the main factor determining the degree of chlorination of the methyl group in dimethylchlorosilane is the molal ratio silane : chlorine. Decrease of the molal ratio increases the content of di-(poly)-chloro-substituted derivatives. The effect of the ratio between dimethyldichlorosilane and chlorine on the results of chlorination obtained by the batch process can be seen from Tab. 1. Continuous chlorination experiments were carried out at 60°C with 0.2% of initiator, varying molal ratio silane/chlorine and contact time. The results (Tab. 2) indicate the same effect of the silane/chlorine ratio on the reaction product as in batch chlorination, i.e., decrease of the molal ratio increases the content of di-(poly)-chloro-substituted derivatives in the product. In order to obtain a maximum yield of mono-chloromethyl-methyldichlorosilane in continuous chlorination of dimethyldichlorosilane (separating the chlorination product from the reaction zone) the molal ratio $(CH_3)_2SiCl_2$: Cl_2 must be greater than in

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S/080/61/034/002/011/025
A057/A129

Preparation of monochloromethyl-methyldichlorosilane

the batch process. Maximum yield in continuous chlorination is obtained at a molal ratio of $(CH_3)_2SiCl_2 : Cl_2 = 1 : 0.3$ and a contact time of 0.5 hr. There are 3 figures, 2 tables and 6 Soviet-bloc references.

SUBMITTED: June 14, 1960

Card 3/6

25397

S/080/61/034/002/019/025
A057/A129

15 8170

AUTHORS: Motsarev, G.V., Rozenberg, V.R., Chashnikova, T.Ya.

TITLE: Preparation and properties of polychlorosubstituted dimethyldichlorosilane and dimethyldiethoxysilane

PERIODICAL: Zhurnal Prikladnoy Khimii, v 34, no 2, 1961, 430-440

TEXT: This is the 2nd communication on halogenation of aliphatic silanes and siloxanes. A detailed investigation on thoroughgoing chlorination of dimethyldichlorosilane was made to obtain tri-, tetra-, penta- and hexachloro-substituted products. The following new compounds were separated and characterized: dichloromethylmethyl-, trichloromethylmethyl-, trichloromethylchloromethyl-, trichloromethyldichloromethyl- and bis(trichloromethyl)-diethoxysilane and also trichloromethyltrioxysilane. The present investigations were necessary, since in literature the only publication concerning thoroughgoing chlorination of dimethylchlorosilane publish-

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Preparation and properties of ...

ed by F. Runge and W. Zimmermann (Ref 2: Ber., 87, 282 (1954)) does not contain data on the chemistry of the process and properties of the products. Dimethylchlorosilane was chlorinated in the present experiments at different temperatures in CCl_4 or without CCl_4, using azobisisobutyronitrile as initiator. Also photochlorinations were carried out (ultraviolet light source was a ПРК-2 (PRK-2) quartz lamp). Since single polychlorosubstitutes of dimethyldichlorosilane could not be separated from the reaction mixture, etherification with absolute alcohol was carried out and the obtained polychlorodimethyldiethoxysilanes were isolated by rectification (Tab.). Composition of the obtained products was determined by hydrolysis of the chloroalkylsilanes with water or aqueous NaOH solutions forming the corresponding chloromethanes. By chlorination of dimethylchlorosilane $(CH_3)_2SiCl_2$ at 60°-105°C using 3.1 moles of Cl_2 per mole of $(CH_3)_2SiCl_2$ the trichlorosubstitute is obtained with a 95.1% yield. No side reactions due to splitting of the Si-C bond were observed. Using the ratio of $(CH_3)_2SiCl_2 : Cl_2 = 1 : 4.7$ under the same conditions a mixture of tri-, tetra- and pentachlorosubstitutes containing 41.1% of tetrachlorodimethylchlorosilane can be obtained. In continued chlorination (molal ratio of

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Preparation and properties of ...

$(CH_3)_2SiCl_2$: Cl_2 = 1 : 7.4) the pentasubstitute can be obtained with a 17.1% yield. Simultaneous with the chlorination a side reaction occurs, i.e., a splitting reaction of the chlorination products in the Si-C bond. It was observed that this side reaction (destructive chlorination) inhibits formation of bis-(trichloromethyl)-dichlorosilane (II), but at a ratio of $(CH_3)_2SiCl_2$: Cl_2 = 1 : 10.2 only CCl_4 and CCl_3SiCl_3 were formed. Chlorination was carried out, therefore, under softer conditions, i.e., at 60°C in a CCl_4 medium (ratio of $(CH_3)_2SiCl_2$: Cl_2 = 1 : 12.5) and (II) was obtained with a ~ 45% yield. Using photochlorination the temperature could be lowered even more (to 20°-25°C) and thus a 60% yield of (II) could be obtained. Thus increasing temperature increases the splitting process and decreases the yield of (II). Trichlorodimethyldichlorosilane could be isolated by crystallization. It was determined by hydrolysis that all three chlorine atoms are in one CH_3-group. It was observed that stability of the Si-C bond decreases with increasing chlorination degree of the methyl groups. There is 1 table and 7 references: 3 Soviet-bloc and 4 non-Soviet-bloc. The three English-language publications read as

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25397

S/080/61/034/002/019/025
A057/A129

Preparation and properties of ...

follows: R. Kriessle, I. Elliot, J.Am.Chem.Soc., 67, 1810 (1945), and J.Am.Chem.Soc., 69, 2291 (1946); P.A. DiGiorgio, L.H. Sommer, and F.C. Whitemore, J.Am.Chem.Soc., 70, 3512 (1948).

SUBMITTED: June 14, 1960

Card 4/5

S/081/62/000/024/007/052
B108/B186

AUTHORS: Namazov, I. I., Chashymov, Ch. Ch.

TITLE: Extraction of petroleum cyclohexane by crystalline thiourea (role of activators in extractive crystallization)

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 24, 1962, 721, abstract 24M181 (Azerb. neft. kh-vo, no. 6, 1962, 34 - 37 [Azerb.; summary in Russ.])

TEXT: The extraction of cyclohexane (I) from the fractions of Surakhany crude oil with boiling points 78 - 83, 75 - 85, 75 - 90, and 65 - 90°C was investigated by extractive crystallization with thiocarbamide in the presence of isopropanol as an activator. The fractions yielded concentrates with $n^{20}D$ 1.4185 - 1.4215 and d_4^{20} 0.766 - 0.772, containing 93 - 96% of naphthene hydrocarbons, 75 - 87 % of which were I. The yield of I from its content in the fraction was 90 - 94%. The concentrates are separated by distillation into the components yielding a 98-% I. It was found that the quantity of activator has no essential effect on the extraction of I from the fractions, even when no activator at all is present. The authors explain this by the

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absence of complex-formation inhibitors in the fractions investigated.
[Abstracter's note: Complete translation.]

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ROMANOW, W.F., k.n.t. [Romanov, V,F.]; KRINZBERG, C.Z., inz.; CHASIN, J.M., inz. [Khasin, I.M.]

New method of finish machining of cylindrical gears. Przegl mech 23 no. 21:619-623 10 N '64.

TUSZKO, Aleksander; CHASKIELEWICZ, Stefan

Problems concerning the planning and coordination of scientific research in Yugoslavia. Nauka polska 10 no.4:165-175 '62.

1. Osrodek Planowania i Koordynacji Badan Naukowych, Polska Akademia Nauk, Warszawa.

R.J AM.

Chasmukhin (V. Y.). Экология эпифитотий заповедных Еловых лесов. [The ecology of epidemics in Pine wood preserves.]—*Советск. Бот.* [*Sovetsk. Bot.*], xv, 1, pp. 17–26, 1947.

The results of this study indicate that the pine wood ground flora suffers only negligibly from fungal attacks. The plants are classified into three groups according to their susceptibility, (1) those apparently immune, (2) those which are attacked, but the infection causes no great harm, and (3) plants subject to widespread epidemics. Plants of group (3) occur especially in leafy tree groves.

CHASNIKOV, I.

Category : USSR/Nuclear Physics - Elementary Particles C-3

Abs Jour : Ref Zhur - Fizika, No 1, 1957, No 398

Author : Kaipov, D., and Chasnikov, I.
Title : On the Mass Spectrum of σ- Mesons.

Orig Pub : Vestn. AN Kaz SSR, 1956, No 5, 68-71

Abstract : Analyzing photographic plates, exposed under absorbers having various atomic numbers, the authors call attention to the fact that in the case of lead one observes a relatively large number of four and five-ray σ-stars. Because of this, a systematic determination of the masses of the σ-mesons was undertaken, with particular attention to four-and five-ray stars. Using the constant deflection method, the masses of 33 σ-mesons, as well as of 10 μ-mesons and 7 π-mesons, were determined. Assuming $m_\mu = 209 m_e$, the result obtained was $m_\pi = 275 \pm 12$, m_σ (1 and 2 ray) $= 260 \pm 20 m_e$, and m_σ (4 and 5 ray) $= 472 \pm 60 m_e$. Spectral distributions are given, which show that the mass of σ -mesons corresponding to four - and five-ray stars ranges from 400 -- 500 up to 1,000 m_e, and the mass of σ -mesons and of π-mesons corresponding to one and two ray stars range only up to 300 -- 430 m_e. Analogous results were obtained by processing data obtained in another experiment using the flash count and range method. It is thus the

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Category : USSR/Nuclear Physics - Elementary Particles

Abs Jour : Ref Zhur - Fizika, No 1, 1957, No 398

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opinion of the authors that the resultant data indicate the existance of nuclearly-active mesons with a mass of 500--600 me. The frequency of appearance of such mesons does not exceed 7% of the total number of π-mesons, generated in heavy elements.

Card : 2/2

Chastnikov, I.Ya.

120-4-6/35

AUTHORS: Lukin, Yu.T., Takibayev, Zh.S. and Chastnikov, I.Ya.

TITLE: An Investigation of the Distortion Produced in Nuclear Emulsions by the Introduction of Threads into Them. (Issledovaniye iskazheniy v yadernykh emul'siyakh, vnosimykh utoplennymi nityami)

PERIODICAL: Pribory i Tekhnika Eksperimenta, 1957, No.4, pp. 27 - 29 (USSR).

ABSTRACT: There are a number of methods of introducing a material into an emulsion: 1) The emulsion may be loaded with the material in the form of a suspension when still in the liquid state (Ref.1). 2) A thin foil can be placed between prepared emulsion layers (Ref.2). 3) Thin metallic threads can be placed into the emulsion when it is still in the liquid state (Ref.3 and 4). The present work is devoted to the determination of distortions introduced into emulsions by the inclusion of thin metallic threads or filaments. 660 ± 5 MeV protons were used to irradiate emulsions with and without metallic threads and the distortion was determined by comparing the scattering of these protons in the two kinds of emulsion. At the same time, the "scattering constant" for the emulsion NIKFI (type P) which was used in the above work was also determined. This was

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Distr: 4E3d

Energy spectra of nucleons obtained by splitting of tungsten and aluminum nuclei. R. G. Bova, Yu. T. Lukin, Zh. S. Takibaev, and I. Ya. Chasnikov. *Vestnik Akad. Nauk Kazakh. S.S.R.* 13, No. 7, 101-3(1957)(in Russian).—The investigation is concerned with the study of the energy balance when W and Al nuclei are split by cosmic rays. Primary and secondary effects have been considered. Nucleons originating from W have an av. energy of 61 m.e.v. and from Al 55 m.e.v. Tracks of π mesons were found in W and Al, although their no. was only near 1% of that of proton tracks. A. Krembeller

AUTHORS: Boos, E. G., Vinitskiy, A. Kh., Takibayev, Zh. S., Chasnikov, I. Ya. SOV/56-34-3-13/55

TITLE: The Investigation of a Shower Produced by a Singly Charged Particle of High Energy (Issledovaniye livnya, vyzvannogo odnozaryadnoy chastitsey vysokoy energii)

PERIODICLA: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1958, Vol. 34, Nr 3, pp. 622 - 631 (USSR)

ABSTRACT: The case described here of the type (2 + 16 p) was observed in a 600 μ thick emulsion Ilford G-5, which in 1955 was exposed in Italy at an altitude of about 30 km. The energy of the primary particle which was estimated by the usual kinematic method was $(5^{+10}_{-3}).10^{12}$ eV. The shower particles moved within an angle of $1.7.10^{-1}$ rad. The central traces pass in a plate distances up to 5 cm. For this very reason the energy of 15 shower particles could be determined by immediate measurement of the multiple Coulomb scattering. The first

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paragraph discusses the measurement of the momenta of the secondary particles. The scattering was measured individually for all shower particles. The value D of the scattering, which was measured immediately in the experiment, is composed of the pure Coulomb scattering D_k and of the scattering n, which is caused by all the other factors. The quantity n can be measured by measurement of the scattering of a high energy particle at three cells along its trace. The scattering of the shower particles was measured at cells from 500 to 4000 μ. The next paragraph deals with the angular distribution and the energy distribution of the shower particles. The angular distribution of the shower partides is illustrated by a diagram. This angular distribution agrees best with distribution according to the Heisenburg theory. To compare the energy distribution of the shower particles with the theory by Landau a histogram was constructed in the laboratory coordinate system. The here found energy distribution does not correspond with the Landau theory, for a predominance of the low energy shower particles compared with the expected theoretical values is observed. The measured energy of the particles is smaller by one order of magnitude than the the corresponding theoretical values. A diagram illustrates the energy distribution of

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15 shower particles in the center of mass system. This curve corresponds to the energy spectrum of the Heisenberg theory. The coefficient of the non-elasticity in the center of mass system amounts to $0,10^{+0,06}_{-0,02}$. The shower investigated here obviously has been generated by a nucleon-nucleon collision. The third paragraph discusses the soft component which accompanies the shower. To study this soft component the emulsion was evaluated inside a cone with the half aperture angle of 0,15 rad relatively to the shower axis. In this volume 10 electron-positron pairs and 1 trident were found. The corresponding data are compiled in a table. In case of knowledge of the number of the primary electron-positron pairs, which accompany a given shower, the expected number of neutral pions can be computed by application of the law of radioactive decay; a corresponding formula is written down here. For the mean energy of the neutral pions the value 15 $\pm$ 3 BeV is found. There are 6 figures, 4 tables, and 14 references, 4 of which are Soviet.

APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000308210004-3"

CHASNIKOV, I. YA.

AN INVESTICATION OF THE ENERGY SPECTRUM OF PARTICLES GENERATED IN HIGH-ENERGY NUCLEAR INTERACTIONS

A. Kh. Vinitskiy, I. G. Golyak, Zn. S. Takibayev,
I. Ya. Chasnikov

A study was made of the energy spectrum of particles generated in high-energy nuclear interactions ($\geq 10^{12}$ ev) in photographic emulsions. The energy of the charged shower particles was determined by measureing multiple Coulomb scattering. This method of determining the energy is a complex experimental problem, the difficulty being to distinguish spurious scattering from Coulomb scattering. This method of determining the energy in a complex experimental problem, the difficulty being to distinguish spurious scattering from Coulomb scattering. We utilized the procedure of evaluating and excluding spurious scattering by means of multiple cells and the higher differences of coordinates. The correctness of this procedure was verified on the tracks of protons of energy close to 9 Bev in nuclear emulsions irradited on the proton synchrotron of the Joint Institute of Nuclear Research. Besides use was made for the very same purpose of certain published data on measurements of multiple scattering of particles accelerated by the bevatron.

Report presented at the International Cosmic Ray Conference, Moscow, 6-11 July 1959

SOV/120-59-1-12/50

AUTHORS: Chasnikov, I. Ya., Takibayev, Zh. S., Boos, E. G.

TITLE: Determination of the Energy of Relativistic Particles from Measurements on Multiple Coulomb Scattering (Opredeleniye energii relyativistskikh chastits po izmereniyu mnogokratnogo kulonovskogo rasseyaniya)

PERIODICAL: Pribory i tekhnika eksperimenta, 1959, Nr 1, pp 54-57, (USSR)

ABSTRACT: The quantity which is measured directly is the second difference in coordinates given by:

$$\bar{D}^2 = \bar{D}^2_{coul} + n^2 \qquad (1)$$

where $\bar{D}_{coul} = Kt^{3/2}/P\beta C$, K is a constant and n is given by $n^2 = \bar{D}^2_{\eta} + \bar{D}^2_{noise}$. The quantity D_{noise} gives all the possible errors associated with measurements on the microscope (Ref 3). It may be shown (Ref 6) that for large cells $n = at^x$ so that:

$$\bar{D}^2 = (K/P\beta C)^2 t^3 + a^2 t^{2x} \quad . \qquad (2)$$

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Determination of the Energy of Relativistic Particles from Measurements on Multiple Coulomb Scattering

In Eq (2) there are three unknowns, namely, the momentum $P\beta C$ and the quantities a and x. To determine them it is necessary to have three equations corresponding to three cell sizes t. Such a system of equations is most conveniently solved in the case of cells whose lengths are in the ratio 1:2:4 so that:

$$\bar{D}_1^2 = (K/P\beta C)^2 t_1^3 + a^2 t^{2x} ,$$

$$\bar{D}_2^2 = 8(K/P\beta C)^2 t_1^3 + a^2 2^{2x} t^{2x} , \qquad (3)$$

$$\bar{D}_4^2 = 64(K/P\beta C)^2 t_1^3 + a^2 2^{2x} 2^{2x} t_1^{2x} .$$

Solution of the above three equations gives:

Determination of the Energy of Relativistic Particles from Measurements on Multiple Coulomb Scattering

$$P\beta C = Kt_1^{3/2}\sqrt{\frac{64\bar{D}_1^2 + D_4^2 - 16\bar{D}_2^2}{\bar{D}_1^2\bar{D}_4^2 - \bar{D}_2^4}} \quad . \qquad (4)$$

By measuring $\bar{D}_1$, $\bar{D}_2$ and $\bar{D}_4$ the momentum of a particle may thus be directly determined. The method will work satisfactorily when the coulomb scattering is of the order of the distortion effect described by D_Π . The latter is due to micro-distortions in the emulsion. The above method was verified using the data obtained in Ref 2 by measuring multiple scattering of 4.5 Gev π-mesons in Ilford G-5 emulsions. The authors report that in this case the method works satisfactorily. Other measurements have shown that the method will work up to 20 Gev if tracks 4-5 cm in length are available. There are 4 figures and 9 references, of which 5 are Soviet, 1 is

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English and the rest are Italian.

ASSOCIATION: Institut yadernoy fiziki AN KazSSR (Institute of Nuclear Physics, Academy of Sciences, KazSSR)

SUBMITTED: January 4, 1958.

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21(1), 21(7)

AUTHORS: Granovskiy, Ya. I., Chasnikov, I. Ya. SOV/56-36-4-24/70

TITLE: On the Analysis of Showers of High Energy
(K analizu livney bol'shoy energii)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 36, Nr 4, pp 1119-1122 (USSR)

ABSTRACT: The present paper was inspired by two Italian papers (Refs 1, 2) in which the energy dependence of shower particles upon the angle of departure of these particles had been investigated in the laboratory system. The authors found a bivalent dependence, which was explained by assuming double- or multiple collisions between the primary particle with the nucleons of the target nucleus in an interaction. The authors of the present paper point out that, if the existence of multi-charged shower particles is assumed, a bi- or multivalence of this dependence may also occur (the case of a shower formed from multi-charged particles was discovered and dealt with in the laboratory of the authors). $pv = f(1/\sin\theta)$ describes for the case of multi-charged particles two curves (Fig 1). Such a bivalence was found to exist also

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by Boos, Vinnitskiy et al. (Ref 3) for showers in (N,N)-collisions. In the present paper the authors show that this kind of energy dependence on the angle of departure can be kinematically explained for certain showers without any assumptions as to the interaction mechanism of primary particles with one or several nucleons of the target nucleus. For $V_c > V^*$ (V_c = velocity of the center of mass system, V^* = particle velocity in the c.m.s., p = particle momentum, θ = spatial angle of departure of particles in the laboratory system) an expression is derived for $E/m = y$ by means of the Lorentz transformation $E^* = \gamma_c(E - pV_c\cos\theta)$, $\gamma_c = 1/\sqrt{1 - V_c^2}$ and in several diagrams for various γ_c the dependence of y-values on the x-values ($x = 1 - V_c^2\cos^2\theta$) is represented. With $a = E^*/m\gamma_c$ and $E = \gamma_c(E^* + p^*V_c\cos\theta^*)$ it holds for $\theta^* = 90^\circ$ that $y = \gamma_c^2 a$. By using these equations the authors show the possibility of obtaining

a more precise determination of γ_c which takes the energy of angular distribution of the flying-off particles into account. The authors finally thank Zh. S. Takibayev for his interest and valuable comments. There are 3 figures and 5 references, 3 of which are Soviet.

ASSOCIATION: Institut yadernoy fiziki Akademii nauk Kazakhskoy SSR (Institute for Nuclear Physics of the Academy of Sciences, Kazakhskaya SSR)

SUBMITTED: September 6, 1958

CHASNIKOV, I. Ya., Cand Phys-Math Sci (diss) "Investigation of the energy characteristics of shower particles according to the measurements of their multiple diffusion in a nuclear photoemulsion," Alma-Ata, 1960, 10 pp (Institute of Nuclear Physics, AS Kazakh SSR) (KL, 39-60, 114)

S/058/61/000/010/010/100
A001/A101

3.2410

AUTHORS: Vinitskiy, A.Kh., Golyak, I.G., Takibayev, Zh.S., Chasnikov, I.Ya.

TITLE: Investigation of energy spectrum of particles produced in high-energy nuclear interactions

PERIODICAL: Referativnyy zhurnal.Fizika, no.10, 1961, 95, abstract 10B491 ("Tr. Mezhdunar. konferentsii po kosmich lucham, 1959, v. 1", Moscow, AN SSSR, 1960, 61 - 70)

TEXT: The authors investigated showers in which the energy of produced particles was determined by measuring multiple Coulomb scattering or, in rare cases, by measuring relative scattering of closely flowing particles. In the case of two showers (2 + 16 p and 2 + 14 n), the spectra of γ-quanta, being decay products of π^0-mesons, were obtained; the energies of γ-quanta were determined on the basis of analysis of electron-positron pairs produced by them. The experimental data obtained in this way are compared with spectra of γ-quanta following from various versions of the theory of multiple meson production.

[Abstracter's note: Complete translation] L. Dorman

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S/707/60/003/000/004/013
B117/B102

AUTHOR: Chasnikov, I. Ya.

TITLE: Determination of the energy of charged particles in a nuclear emulsion

SOURCE: Akademiya nauk Kazakhskoy SSR. Institut yadernoy fiziki. Trudy. v. 3, 1960. Vzaimodeystviye vysokoenergichnykh chastits s atomnymi yadrami, 64-88

TEXT: The possibility of eliminating spurious scattering and determining true Coulomb scattering is investigated. The first part of the paper thoroughly deals with methods of eliminating spurious scattering, the measurement of multiple scattering, and the determination of the optimum cell length, and treats the problem of determining the particle energy by measuring their multiple scattering with different spurious-to-Coulomb scattering ratios. It was shown that the energy at $D_k \geqslant 4n$ can be easily determined without eliminating spurious scattering ($s_i = y_i - y_{i-1}$; $D_i = s_i - s_{i-1}$). A method of multiple cells basing on $n = at^x$ was

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Determination of the energy ...

suggested for $\bar{D}_k \leq 4n$. Further, an independent method for determining true Coulomb scattering and eliminating spurious scattering by means of maximum coordinate differences, basing on the statistics of spurious scattering, was suggested: corresponding deviations are accidental and independent. It is recommended that the contribution of spurious scattering should be determined from the simple relations $\bar{D}^{III}/\bar{D}$ or $\bar{D}^{IV}/\bar{D}^{III}$. The second part deals with experimental data obtained with an МБИ-8М no. 5608 (MBI-8M no. 5608) measuring microscope especially equipped for nuclear emulsions. Multiple scattering was measured on traces of protons which were accelerated in the synchrocyclotron of the Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research) (660 Mev) and in the proton synchrotron at Dubna (10 bev). These measurements confirmed the correctness of the methods suggested. An energy of the order of 25 bev was determined on shower particle traces several centimeters long. Some results of this study were published in other periodicals (Zhurnal eksperimental'noy i teoreticheskoy fiziki AN SSSR; Pribory i tekhnika eksperimenta; Vestnik AN Kazakhskaya SSR) as well as at conferences in Tbilisi (1956), Dubna (1957), and Moscow (1959). Academician Zh. S. Takibayev, Professor, Doctor of Physics and Mathematics,

are thanked for valuable hints, as well as R. A. Tursunov and K. V. Sharapov, co-workers of the Institute, for assisting with measurements and calculations. There are 7 figures, 8 tables, and 30 references: 10 Soviet and 20 non-Soviet. The four most recent references to English-language publications read as follows: Biswas S. et al. Proc. Ind. Acad., A, 56, 1957. Fowler P. H., Waddington, C. S. Phil. Mag. 1, 637, 1956. Koshiha M. and Kaplon M. F. Phys. Rev., 97, 193, 1955. Biswas S., et al. Proc. Ind. Acad., A, 41, 154, 1955.

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S/120/60/000/005/002/051
E032/E514

24.6810

AUTHORS: Chasnikov, I.Ya., Takibayev, Zh.S., Tursunov, R.A. and Sharapov, K.V.

TITLE: Measurement of Multiple Scattering on the Tracks of ~10 GeV Protons

PERIODICAL: Pribory i tekhnika eksperimenta, 1960, No.5, pp.15-19

TEXT: A large number of papers have been published on the multiple scattering of charged particles in nuclear emulsions (Refs.1-10 and others) in which it is concluded that micro-distortions of the emulsion give rise to spurious scattering. These local distortions are a serious problem in high-accuracy work. Other sources of spurious scattering, such as stage noise, thermal noise etc. can now be adequately allowed for so that the local distortion is a residual effect still to be overcome. The present authors have measured the multiple scattering in НИКФИ-Р (NIKFI-R) emulsions 450 μ thick using the МБИ-8 m (MBI-8 m) microscope. The 10 GeV synchrophasotron of the Joint Institute for Nuclear Studies was used as the source of the protons. The total length of tracks examined was 2.8 m and the mean length per track was 5 cm. The

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following methods were used to analyse the data obtained. The second difference $\bar{D}$ can be written down in the form

$$\bar{D}^2 = \bar{D}_k^2 + n^2 \qquad (1)$$

where $\bar{D}_k$ is the contribution due to Coulomb scattering and is equal to $1.74\ Kt^{3/2}/PV$, where P is the momentum, V is the velocity, K is the scattering constant and n is the contribution due to spurious scattering. When $\bar{D}_k \leqslant 4n$, the quantity n can be excluded by various methods, for example, by taking higher differences (Ref.10). The spurious scattering n can be looked upon as consisting of two parts, one of which depends on the cell size and the other does not. The latter can always be subtracted from the measured $\bar{D}$ in which case Eq.(1) can be re-written in the form

$$\bar{D}^2 = (1.74\ K/PV)^2 t^3 + a^2 t^{2x} \qquad (2)$$

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On the other hand, the method of three multiple cells described by Chasnikov et al. (Ref.8) gives

$$\bar{D}_K = \left(\frac{\bar{D}_1^2 \bar{D}_4^2 - \bar{D}_2^4}{64\bar{D}_1^2 + \bar{D}_4^2 - 16\bar{D}_2^2} \right)^{1/2} \qquad (3)$$

where $\bar{D}_1$, $\bar{D}_2$ and $\bar{D}_4$ are the mean second differences for cells in the ratio 1:2:4. If one takes into account the fact that the scattering constant K depends on the cell size, the numbers 64 and 16 in Eq.(3) should be replaced by 68 and 16.48. The spurious scattering n can be independently determined and excluded by using higher differences, for example, third, fourth etc. differences. The higher differences also exclude systematic distortions. Chasnikov (Ref.10) has also shown that the dependence of the higher

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differences on $\bar{D}_K$ and n is

$$n = 0.5222(2\bar{D}^{III^2} - 3\bar{D}^2)^{1/2}, \quad (5)$$

$$n = 0.2(9\bar{D}^{IV^2} - 24\bar{D}^{III^2})^{1/2}, \quad (6)$$

$$\bar{D}_K = 0.4264(10\bar{D}^2 - 3\bar{D}^{III^2})^{1/2}, \quad (5')$$

$$\bar{D}_K = (2.8\bar{D}^{III^2} - 0.8\bar{D}^{IV^2})^{1/2} \quad (6')$$

$\bar{D}_K$ can be found from Eqs.(5') or (6') only in the case of good statistics, since small statistical fluctuations in $\bar{D}^{III}$ or $\bar{D}^{IV}$ have a strong effect on $\bar{D}_K$. As the order of the difference increases, the contribution due to spurious scattering to this difference for a given cell will also increase. It is, therefore, desirable to determine this spurious scattering with the aid of the

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higher order differences. The spurious scattering cannot be determined when the statistical error $\Delta D_{st} \simeq n$. When $\Delta D_{st} > n > D_K$ the energy cannot be determined at all. The best results for the energy when $\Delta D_{st} \simeq n$ are obtained when the scattering is measured using the optimum cell size t_{opt}. Chasnikov (Ref.10) has described a method for determining t_{opt} from the experimentally determined t_{min} for which $\bar{D}/t$ is a minimum. The quantity t_{opt} depends on the length of the track R and t_{min} in the following way:

$$t_{opt} \sim R^{\frac{1}{2(2-X)}} \; t_{min}^{\frac{3-2X}{2(2-X)}}$$

where t_{opt}, t_{min} and R are in units of 100 μ. According to the measurements carried out by the present authors and also other data $X < 1$. When $X = 0.5$, $t_{opt} = cR^{1/3}t_{min}^{2/3}$. With this value of X

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$t_m = t_o$, where t_o is the cell size corresponding to $D_K = n$. It should be noted that t_{min} is not always equal to t_o, since the spurious scattering index X may not be the same for different emulsions. In finding t_o it is convenient to use the ratios $\rho = \bar{D}^{III}/\bar{D}$ and $q = \bar{D}^{IV}/\bar{D}$. When $\bar{D}_K = n$, $\rho = 1.55$ and $q = 2.8$. However, in the presence of systematic distortions of tracks it is better to use the ratio $\bar{D}^{IV}/\bar{D}^{III}$ or the equivalent ratio q/ρ, which is less dependent on systematic errors. The following table gives the mean values of the second differences for different cells and also the values of ρ and q obtained in the present work.

t, mm	$\bar{D}$, μ	Number of second differences/ degree of overlapping	ρ	q
0.5	0.221	4966/1	1.75	3.23
1	0.333	4832/2	1.66	3.10
2	0.600	4592/4	1.44	2.58
4	1.529	3536/3	1.18	1.72
8	4.553	1344/16	1.12	1.87

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The following table gives the values of PV determined by different methods (in GeV)

t,mm	2	3	4	5	6
0.5	2.5	1.8	1.6	11.9±2.4	-
1	4.7	3.5	3	9.36± 0.67	9.8±2.9
2	7.7	6.5	6	8,98±0.90	10.7±1.0
4	8.8	9.1	8.7	-	9.82±0.63
8	8.6	9.3	9.1	-	9.96±1.5

The first, third and fourth columns give the values of PV without allowing for spurious scattering and based on second, third and fourth differences, respectively, with $\bar{D}_K$ assumed equal to $\bar{D}$, $\bar{D}^{III}/\varrho_K$, $\bar{D}^{IV}/q_K$. Columns 5 and 6 give the values obtained by

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the multiple cell method and with the aid of Eq.(6'). It was found that in the emulsion used by the present authors the spurious scattering n follows the power law $n = 0.08\ t^{0.6}$. It is thus found that provided the spurious scattering is allowed for, the energy of charged particles can be determined by the multiple scattering method in the region of 10 GeV. At this energy the spurious scattering is negligible for a cell size of t = 4 mm.
Acknowledgments are made to V. I. Veksler and M.I.Podgoretskiy for supplying the nuclear emulsions irradiated with protons obtained from the above machine. There are 2 figures, 4 tables and 11 references: 3 Soviet, 1 German and 7 English.

ASSOCIATION: Institut yadernoy fiziki AN KazSSR (Institute of Nuclear Physics, AS, KazSSR)

SUBMITTED: July 14, 1959

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S/020/60/135/003/017/039
B019/B077

AUTHORS: Takibayev, Zh. S., Academician of the Kazakhskaya SSR, Botvin, V. A., and Chasnikov, I. Ya.

TITLE: An Analysis of Some Inelastic p-n Interactions at an Energy of 9 Bev

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 135, No. 3, pp. 571-572

TEXT: In an emulsion pile - НИКФИ-Р (NIKFI-R) emulsions - exposed in the proton synchrotron of the Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research) some events of inelastic p-n interaction were discovered. Out of 72 recorded events with three-pronged stars 22 were found where the complete identification of all secondary charged particles was possible. Ionization measurements and multiple Coulomb scatterings were used to identify these particles. The authors conclude from the studies of the angular distribution of the π mesons and the protons that the asymmetric angular distribution (measured to $A \approx 0.55 \pm 0.24$) of the forward scattered secondary charged

An Analysis of Some Inelastic p-n Interactions at an Energy of 9 Bev

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particles for the p-n interaction in the center of mass system cannot be caused through the protons; (the proton angular distribution is practically symmetric but that of the pions is strongly asymmetric.) In order to guarantee this opinion further tests have to be carried out. The mean energy value of the protons and π mesons determined in the center of mass system amounts to $\overline{E}_p = 1.303 \pm 0043$ Bev and $\overline{E}_\pi = 0.436 \pm 0.030$ Bev and the transverse impulse is $\overline{P}_p = 0.244 \pm 0.032$ Bev/c and $\overline{P}_\pi = 0.158 \pm 0.022$ Bev/c. Future publications are announced. There are 2 figures and 5 Soviet references.

SUBMITTED: May 16, 1960

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BOTVIN, V.A.; TAKIBAYEV, Zh.S.; CHASNIKOV, I.Ya.; PAVLOVA, N.P.; BOOS, E.G.

Study of three-pointed stars resulting from inelastic pn-interactions in a nuclear emulsion at an energy of 9 Bev. Zhur. eksp.i teor.fiz. 41 no.4:993-1002 O '61. (MIRA 14:10)

1. Institut yadernoy fiziki AN Kazakhskoy SSR.
(Photography, Particle track) (Protons) (Neutrons)

39305
S/707/62/005/000/001/014
D290/D308

24.6700

AUTHORS: Botvin, V.A., Takibayev, Zh.S., Chasnikov, I.Ya., Boos, E.G. and Pavlova, N.P.

TITLE: Analysis of some inelastic p-n-interactions at 9 Bev

SOURCE: Akad iya nauk Kazakhskoy SSR. Institut yadernoy fiziki Trudy. v. 5, Alma-Ata, 1962. Fizika chastits vysokikh energiy. Struktura yadra, 3-15

TEXT: The authors studied in detail the characteristics of the secondary particles from three-ray p-n-interactions produced by 9 Bev protons; the work was carried out because of appreciable differences in the results for such reactions given in the literature. Nuclear emulsions type НИКФИ-Р (NIKFI-R) were used. The aggregate angular distribution of π -mesons and protons is symmetrical in the center-of-mass system (CMS); the individual angular distribution for π -mesons and protons are asymmetric in CMS, protons predominating in the back direction and π -mesons in the forward direction. The energy spectrum of protons in CMS is harder than that predicted by

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the statistical theory with allowance for isobars. The energy spectrum of π -mesons in CMS at high energies approximates to a Heisenberg spectrum, except that the maximum in the theoretical spectrum occurs at an appreciably lower energy; the spectrum predicted by the statistical theory with allowance for isobars is harder for all energies. The measured inelasticity coefficients show that for protons and π -mesons half the energy concerned in meson production is carried away by π^0 -mesons; this indicates that equal numbers of π^0 - and $\pi^\pm$ -mesons are produced provided that the energy spectra of neutral and charged mesons are identical. The average energy carried away per charged π -meson or proton does not depend on the type of reaction. The distribution of the true inelasticity coefficient does not show a sharply defined maximum; there are indications of the presence of two maxima but this is only a tentative conclusion. There are 13 figures and 4 tables.

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39306
S/707/62/005/000/002/014
D290/D308

24.6700

AUTHORS: Boos, E.G., Takibayev, Zh.S., Botvin, V.A., Chasnikov, I.Ya. and Pavlova, N.P.

TITLE: Analysis of p-nucleon interactions produced at an energy of 10^{10} eV in nuclear photoemulsion

SOURCE: Akademiya nauk Kazakhskoy SSR. Institut yadernoy fiziki. Trudy. v. 5. Alma-Ata, 1962. Fizika chastits vysokikh energiy. Struktura yadra, 16-32

TEXT: The authors have developed a new method of finding the angular and energy characteristics of nuclear disintegrations that is based on the calculation of the distribution of transverse momentum of secondary particles; for all identifiable particles the method gives closer agreement with experiment than other methods of approximation. The method permits an estimate of the dependence of the following characteristics on observed multiplicity: a) the degree of anisotropy of the angular distribution of shower particles in the center-of-mass system (CMS) for a Lorentz-factor (γ_c) of 2.4 decreases with increasing multiplicity; for 3- and 8-ray stars

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Analysis of p-nucleon interactions ...

there is an appreciable asymmetry in forward and backward emission of particles, b) in the region of average multiplicity (between 3 and 8) the best agreement with the expected value $\gamma_c = 2.4$ is shown by a quantity found by a kinematic method which assumes a uniform distribution of the transverse momenta of shower particles; the assumption $\beta_c/\beta_i' = 1$ (β_c is the velocity of the center-of-mass with respect to laboratory coordinates (LC), β_i' is the velocity of the particles in CMS) leads to a systematic overestimate of the energy by a factor of two. Regardless of the method of estimation, γ_c for 3-ray stars is too high, while γ_c for 8-ray stars is too low; therefore the Lorentz-factor of the system where angular symmetry of the secondary particles is assumed, will decrease as the multiplicity increases, c) as the multiplicity increases, the fraction of the energy carried off by charged meson increases both in LC and CMS, but the fraction of the energy per meson is almost unchanged (about 17%); therefore $n_{\pi^0}/n_{\pi^\pm} < 0.5$ for 7- and 8-ray stars provided that the energy spectra $n_{\pi^0}/n_{\pi^\pm}$ of π^0 and $\pi^\pm$ -mesons are identical. The mass of the target also increases with the multi-

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plicity, but it does not exceed the mass of nucleon; this confirms the criteria for the selection of n-n-interactions. The authors acknowledge the help of L.I. Mikhaylova and O.V. Gunenkova. There are 8 figures and 4 tables.

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S/031/62/000/008/001/001
B164/B102

AUTHOR: Chasnikov, I. Ya., Candidate of Mathematical and Physical Sciences

TITLE: Identification of charged particles by means of δ electrons

PERIODICAL: Akademiya nauk Kazakhskoy SSR. Vestnik, no. 8(209), 1962, 96 - 98

TEXT: The author studies the possibility of identifying fast charged particles in nuclear emulsions of the type НИКФИ-Р (NIKFI-R) in the energy range 1.5 Bev $\leq p\beta c \leq$ 2.5 Bev from the δ electrons, the energy, the angular distribution, and the yield:

$$T = \frac{2m_e c^2(\gamma^2-1)}{1+\gamma^2\tan\theta} \qquad (1)$$

where θ is the emission angle of the δ electrons, $m_e c^2$ is the energy of the electrons at rest, γ is the energy of the primary particles to be identified in terms of their mass at rest: $\gamma = 1/\sqrt{1-\beta^2}$, β is the primary

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particle velocity in terms of the light velocity. Since T and θ depend on γ only, and since in the energy range concerned $2 \leq \gamma_p \leq 3$ and $10 \leq \gamma_\pi \leq 18$, a distinction can be made between the δ electrons of protons and pions if $\theta \leq 35^\circ$. The distinction between particles with $2 \leq \gamma \leq 3$ and $10 \leq \gamma \leq 18$ is made by calculating the number of δ electrons that possess energy $1\ \text{Mev} \leq T \leq 2m_e c^2 \beta^2/(1-\beta^2)$ and are produced by the primary particles along 10 cm of their path. For this purpose the Mott scattering formula (P. L. Jain, Phys. Rev. v. 120, no. 1, 293 (1960)) is integrated. The values obtained are compared with the experimental values. Integration of the Mott formula for $T_{min} \leq T \leq T_{max} = 2m_e c^2 \beta^2/(1-\beta^2)$ gives the total number N_e of the detectable δ electrons. Since, according to the Mott formula, N_e mainly depends on β^2 and since at the primary energy considered β^2 for pions is about 12 to 24% higher than for protons, the number of δ electrons produced by protons and pions per cm of their path is different also. Detailed results will be published shortly. There are 2 figures and 2 tables.

CHASNIKOV, I. YA.

S/056/62/042/001/001/048
B125/B108

AUTHORS: Boos, E. G., Botvin, V. A., Pavlova, N. P., Takibayev, Zh. S., Chasnikov, I. Ya.

TITLE: Analysis of 9-Bev proton-nucleon interaction in a nuclear emulsion

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42, no. 1, 1962, 3 - 11

TEXT: A constant distribution of transverse momenta is assumed for the suggested method of studying the dependence of angular and energy characteristics of proton-nucleon interaction on multiplicity. All showers observed in a P (R) type НИКФИ (NIKFI) emulsion irradiated with 9-Bev protons from the proton synchrotron of the OIYaI were classified according to their multiplicity. The transverse momenta of the secondary particles are constant over a wide range of primary particle energies and depend only slightly on multiplicity and target mass. The experimental distribution of $p_\perp$ is satisfactorily approximated by $\Delta N/N\Delta p_\perp = \sigma p_\perp \exp(-p_\perp^2/b^2)$ (1). Owing

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to the law of conservation of momentum, the mean value of $p_\perp$ increases with increasing Θ in the case of small angles. Results of this method show better agreement with the experiment than earlier methods. The angular distribution of shower particles becomes more isotropic (in the c.m.s) with increasing multiplicity. The particle emission of the 3 and 8-pronged stars forward and backward is not symmetric. The best agreement with the expected Lorentz factor ($\gamma_c = 2.4$) is attained for mean multiplicities ($3 < n_s < 8$). The Lorentz factor tends to a decrease with increasing multiplicity. The portion of energy imparted to charged mesons increases with multiplicity in both the laboratory and center-of-mass systems. Hence, $n(\pi^0)/n(\pi^\pm) < 0.5$ for 7 or 8-pronged stars with equal energy spectra of π^0 and $\pi^\pm$ mesons. The estimable mass of the target particles increases with multiplicity, but does not exceed the nucleon mass estimated by M. G. Birger and Yu. A. Smorodin (ZhETF, 36, 1159, 1959). This justifies the criteria of selecting nucleon-nucleon interactions. The coworkers of the OIYaI are thanked for discussions, I. M. Gramenitskiy and M. I. Podgoretskiy for supplying their preprint on the angular distribution of particles in 8-pronged stars. There are 7 figures, 1 table, and 15 references: 11 Soviet and 4 non-Soviet.

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The reference to the English-language publication reads as follows:
P. L. Jain, E. Lohrmann, M. W. Teucher. Phys. Rev., 115, 643, 1959.

ASSOCIATION: Institut yadernoy fiziki Akademii nauk Kazakhskoy SSR
(Institute of Nuclear Physics of the Academy of Sciences
Kazakhskaya SSR)

SUBMITTED: January 30, 1961

Card 3/4

BOTVIN, V.A.; TAKIBAYEV, Zh.S.; CHASNIKOV, I.Ya.; BOOS, E.G.; PAVLOVA, N.P.

Study of some inelastic p - n-interactions at an energy of 9 Bev. Trudy Inst. iad. fiz. AN Kazakh. SSR 5:3-15 '62.
(MIRA 15:4)
(Nuclear reactions) (Mesons)

BOOS, E.G.; TAKIBAYEV, Zh.S.; BOTVIN, V.A.; CHASNIKOV, I.Ya.; PAVLOVA, N.P.

Analysis of P-nucleon interactions generated at an energy of E = 10^{10} ev. in a nuclear photoemulsion. Trudy Inst. iad. fiz. AN Kazakh. SSR 5:16-32 '62. (MIRA 15:4)
(Nuclear reactions) (Photography, Particle track)

BOOS, E.G.; BOTVIN, V.A.; VINITSKIY, A.Kh.; TAKIBAYEV, Zh.S.; CHASNIKOV, I.Ya.

Inelastic interactions between protons, π-mesons, and nucleons in photographic emulsions in the 7 - 20 Bev. energy range. Izv. AN SSSR. Ser. fiz. 28 no.11:1770-1772 N '64. (MIRA 17:12)

1. Institut yadernoy fiziki AN KazSSR.

L 22175-65 EWT(1)/EWT(m)/T/EED(b)-3 Pae-2 SSD(a)/SSD(c)/AEDC(a)/AS(mp)-2/
DIAAP/IJP(c)
ACCESSION NR: AP5001824 S/0056/64/047/006/2051/2054

AUTHORS: Anzon, Z. V.; Vinitskiy, A. Kh.; Takibayev, Zh. S.; Chasnikov, I. Ya.; Shakhova, Ts. I.

TITLE: Investigation of ionization losses of relativistic particles in nuclear photoemulsions

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 47, no. 6, 1964, 2051-2054

TOPIC TAGS: nuclear emulsion, ionization, relativistic particle, proton interaction, relativistic particle

ABSTRACT: The purpose of the work was to study the dependence of the ionization characteristic (blob density) on the particle energy (in rest-mass units). To this end, the authors carried out special measurements of the relative ionization in tracks of protons of energy 2, 3, 4 and 5 BeV and pions of 3.8 BeV energy, in stacks of

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NIKFI-R emulsions irradiated at the Joint Institute of Nuclear Research. The stacks were irradiated practically simultaneously in a 9 BeV proton beam, in a direction perpendicular to the emulsion plane. Results obtained from tracks of electron-positron pairs and delta rays in a stack of 600 μ Ilford G-5 emulsion irradiated by 17-BeV pions in the CERN accelerator are also presented. The ratio of the ionization on the plateau of the ionization curve to the value at the minimum coincides for the different emulsions within the limits of experimental error. The average value of this ratio is 1.104 ± 0.010. The observed ionization-momentum dependence agrees with the curve calculated on the basis of the Sternheimer equation (Phys. Rev. v. 88, 851, 1952; 89, 1148, 1953; 91, 256, 1953; 103, 511, 1956), with parameters I = 270 eV and T_0 + 2 keV (I -- ionization potential, T_0 -- cutoff energy). "The authors thank Professor V. I. Veksler and S. I. Lyubomilov for collaboration in the irradiation of the emulsions at OIYaI, and Professor W. O. Lock for supplying the emulsions irradiated at CERN, as well

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as G. B. Zhdanov and M. I. Tret'yakova of FIAN for a discussion on this question." Orig. art. has: 2 figures.

ASSOCIATION: Institut yadernoy fiziki Akademii nauk Kazakhskoy SSR (Institute of Nuclear Physics, Academy of Sciences Kazakh SSR)

SUBMITTED: 12May64

ENCL: 00

SUB CODE: NP

NR REF SOV: 006

OTHER: 003

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CHASNYK, N.

Once more about crosswind. Grazhd. av. 22 no. 10:29 O '65.
(MIRA 18:12)

1. Zamestitel' nachal'nika aeroporta po dvizheniyu, Rostov-na-Donu.

CHASOV, V.A.

Psychological studies during expert evaluation of changes in the mental activity of patients with late sequelae of a closed craniocerebral trauma. Trudy LIETIN no.13:85-94 '64. (MIRA 18:12)